REPORT OF THE AIR FREIGHT WORKING PARTY

INTRODUCTION

Composition of the Working Party

1. The Working Party comprised representatives of the Ministry of Aviation, H.M. Customs and Excise, the Board of Trade, British Overseas Airways Corporation, British European Airways, the British Independent Air Transport Association and the National Air Section of the Institute of Shipping and Forwarding Agents.

Terms of Reference

2. We were appointed on 24th March 1961 to examine cargo handling facilities and methods in the United Kingdom and particularly at London (Heathrow) Airport in relation to the prospective growth in air freight over the next 10 years, and to report.

Meetings and visits

3. We met nine times between 25th May 1961 and 25th January 1962 and paid a visit to Heathrow to see the problems at first hand. In addition, the Chairman and certain members of the Working Party visited Schiphol Airport (Asterdam) and Kloten Airport (Zurich). These, although handling much less traffic than Heathrow, are examples of modern airports where the freight traffic is expanding rapidly. Schiphol was taken as typical of a Common Market airport. We are very grateful for the facilities and information which were generously put at our disposal by the Netherlands and Swiss Airport and Customs authorities, and also to KLM and Swissair for their co-operation in making the visit a valuable one.

FUTURE TRAFFIC

Forecasts by operators and others

4. Early in our consideration we came to the conclusion that the main problem of freight growth arose in connection with Heathrow, and we have therefore spent most of our time in considering this problem. We are satisfied that there is no comparable problem at airports in Scotland and the provinces; the increase in freight traffic which is expected will be within the air traffic control capacities of the airports, and there is space available for any additional freight buildings needed. Except, therefore, where we make specific reference, our figures and conclusions relate to Heathrow.

5. In 1960, Heathrow handled 80,000 short tons of international freight, 24 per cent more than in 1959. Of this total, 44,000 tons was departing from and 36,000 tons arriving at Heathrow. Over the previous five years freight traffic had increased at a substantial rate, and there was little difference in the rates of growth of exports and imports. A uniform rate of increase has been seen in traffic with all the main areas of the world, as Table 1 shows. Although during this period there have been a number of adjustments to the level of freight rates, there have been no dramatic reductions. The increases in traffic are not, therefore, the result of rate reductions, but reflect in the main the increases in freight capacity available and the greater sales efforts made to use this increased capacity. It is, however, fairly certain that over the next few years these factors will in some areas be supplemented by sizable reductions in rate levels, but precisely how large these reductions will be and the form they will take is not yet known. The case of European short-haul traffic is particularly difficult to assess. Even a slight reduction in air freight rates or an upward trend of surface rates could easily lead to a very considerable increase in the tonnage carried by air.

6. Table 1 shows the annual rates of increase in international freight traffic for the period 1955-60 and those forecast for 1960-65 and 1965-70. The assumptions on which the forecasts have been made are given in Appendix A.

Table 1

Annual rates of increase in international freight traffic

Traffic on aircraft to and from:	1955-60 Actual	1960-65	1965-70
Europe (including the Republic of Ireland)	18%	20%	20%
North America	17%	30%	20%
Other long haul	16%	16%	11%
Total	18%	21%	20%

7. These rates of increase result in the estimates of the weight of freight traffic shown in Table 2.

Table 2

International Freight Traffic: Short tons (000's)

Traffic on aircraft to and from:	1960 Actual	1965	1970
Europe (including the Republic of Ireland)	56	140	350
North America	11	40	100
Other long haul	13	30	50
Total	80	210	500

Effect of consolidation of freight on the volume of traffic

8. With the introduction into the cargo rate structure of cheaper rates for large shipments, forwarding agents will have an increasing incentive to consolidate their consignments to take advantage of these reductions. We considered the possible effect of this on the amount of freight coming into London. We came to the conclusion that it could increase to some extent the importance of London as a clearing house for cargo destined for other parts of the United Kingdom. We cannot at this stage say whether it would alter the flow pattern of freight between North America and Europe to the benefit of London or any other entrepôt centre. Clearly, however, the position would be affected by improvements in the facilities which London provided for entrepôt trade.

9. In general, the estimates are offered with some diffidence because of uncertainty about the size and nature of the rate reductions and about the elasticity of demand over the whole freight market. We have not taken into account the effect of a Channel tunnel or bridge on air transport to Europe, since its impact is unlikely to be felt within the period which we are considering.

Comparison with Netherlands and Swiss forecasts

10. We were interested to find that the authorities in Holland and Switzerland had arrived at comparable figures to ours for the rate of growth of freight traffic. Schiphol handles about 20,000 tons of freight a year; increases of 18-20 per cent a year are forecast until 1965, then about 12 per cent a year to 1970. Kloten handles about 15,000 tons, and increases of 20-25 per cent a year over the next 10 years are forecast.

Ratio of exports to imports, and the proportion of cargo carried by United Kingdom and foreign airlines

11. In 1960 approximately 45 per cent of freight at Heathrow was imported and 55 per cent exported. Entrepôt traffic was counted as both imported and exported.

12. United Kingdom airlines handled 45 per cent of the international freight traffic and foreign airlines 55 per cent.

Distribution of freight between passenger and freighter aircraft

13. Table 3 shows the weight of international freight carried in passenger and freighter aircraft in 1960 and Table 4 that forecast for 1970.

Table 3

Short tons (000's) : 1960 (International)

	Passenger aircraft	Freighter aircraft	Total
Europe (including the Republic of Ireland)	26.7	29.	55.7
North America	7.3	3.8	11.1
Other long haul	9.9	3.3	13.2
Total	43.9	36.1	80

Table 4

Short tons (000's) : 1970 (International)

	Passenger aircraft	Freighter aircraft	Total
Europe (including the Republic of Ireland)	90	260	350
North America	30	70	100
Other long haul	40	10	50
Total	160	340	500

14. In 1960 nearly half the international freight was carried on freighters, and there is no doubt that they will play an increasingly important role. The amount of freight carried on passenger aircraft will, of course, also grow with the increase in size of aircraft and with the increase in frequency of flights. There is also plenty of unused capacity for freight at present in passenger aircraft. In arriving at the figures in Table 4, it has been assumed that the capacity available for freight on passenger aircraft will grow at a somewhat higher rate than passenger capacity. On this basis we consider that the growth of freight on such aircraft, allowing for an improvement in the amount of capacity taken up, would be about four-fold. Nevertheless, if the forecasts in Table 2 are realised there will have to be a very great increase in the amount of cargo carried by freighter.

Number of freighter aircraft movements at Heathrow in 1970

15. The following are the approximate estimated capacities of present or projected freighter aircraft:-

	Short Tons
DC3	3
Viscount	8
DC4	9
Argosy	14
DC6	14
DC7	16
Super Constellation	17
Vanguard	21
Britannia	23
CL44	32-39
Belfast	43
Boeing 707 (freighter)	52
DC8 "	56

A study of these figures and of the present freight capacities and loads carried leads us to assume that in general the average load for a short-haul freighter in 1970 will be about 12 tons and for a long-haul freighter 16 tons. Table 5 shows the annual number of freighter movements required on this basis to carry the freight shown in Table 4, and an estimate for an "average day".

Table 5

Annual and "average day" freighter aircraft movements in 1970

	Annual	"Average Day"
Europe (including the Republic of Ireland)	21,500	59
North America	4,400	12
Other long haul	600	2
	26,500	73
Domestic	3,300	9
	29,800	82

The number of movements shown above for an average day is obtained by dividing the annual total by 365. On busy days this number will be exceeded, but the seasonal variation for freighter movements is not as great as for passenger aircraft, and the average can fairly be used.

16. A figure of 80-90 movements a day by freighter aircraft is of some significance from the point of view of air traffic control. At present the daily number of movements by freighter aircraft is about 35. Postulating an increase of about 150 per cent raises the question whether this number of

freighter aircraft movements can be fitted into the air traffic pattern at the airport, except at the expense of passenger aircraft.

17. Table 6 shows the hourly pattern of movements by passenger aircraft and by freighter aircraft on a busy day in 1961. The day illustrated, Saturday 29th July, although a busy day, was not the busiest of that Summer and therefore can be taken as typical of average busy conditions rather than peak conditions. It will be seen that on that day freighter aircraft did not materially contribute to the traffic in the busiest hours, and taking the day as a whole it was possible to handle them without difficulty over and above the requirements of passenger aircraft. However, this situation, so far as the busy hours are concerned, cannot be expected to hold good for 1970 if by then there is to be a 150 per cent increase in freighter movements. In that year we expect passenger aircraft movements to be consistently up to a level of 60 movements an hour in the busy periods, and even higher in the exceptionally busy periods. We expect that air traffic control will be capable of handling this level of passenger aircraft movements in 1970, but that there will be little, if any, margin to spare for handling freighter aircraft in the busy periods of the day, which will in any event tend to stretch more throughout the day as the amount of traffic approaches the capacity of the airport.

18. The extent to which freighter movements can be accepted at Heathrow in 1970, therefore, depends on the extent to which they can be scheduled outside the busy hours for passenger aircraft or the extent to which passenger aircraft will give way to them. It is not easy to assess the margin available for freighter movements, but we have attempted to do this in Table 7 by comparing the estimated air traffic control capacity in that year with scaled-up figures of passenger aircraft movements on the pattern of those in Table 6. The spare capacity shown in the fifth column would therefore be theoretically available for freighter aircraft. (The figures in Column 3 of Table 7 do no more than take account of the fact that the need to avoid excessive noise at night will almost certainly place some limit on the movement of aircraft during the hours shown. They should not be taken as an indication of what we consider a reasonable limit).

Table 6

Heathrow: Hourly aircraft movements: Typical busy day, 1961

G.M.T.	Passenger Aircraft	Freighter Aircraft	Total
00-	8	6	14
01-	10	3	13
02-	8	3	11
03-	6	3	9
04-	6	1	7
05-	17	4	21
06-	22	1	23
07-	24	1	25
08-	38	-	38
09-	37	1	38
10-	36	2	38
11-	27	-	27
12-	26	-	26
13-	21	1	22
14-	24	-	24
15-	32	-	32
16-	29	1	30
17-	30	1	31
18-	27	-	27
19-	21	3	24
20-	22	1	23
21-	14	1	15
22-	17	-	17
23-	14	2	16
	516	35	551

Table 7

Comparison of A.T.C. capacity and hourly movements of passenger aircraft and an estimate of the spare capacity available for freighters in 1970

G.M.T.	Estimated Air Traffic Control Capacity	Noise Limit	Estimated movements of passenger aircraft in 1970	"Spare" capacity in 1970
00-	30	20	15	5
01-	30	20	15	5
02-	30	20	15	5
03-	30	20	10	10
04-	30	20	10	10
05-	50	30	30	-
06-	50		35	15
07-	50		40	10
08-	60		60	-
09-	60		60	-
10-	60		60	-
11-	50		45	5
12-	50		40	10
13-	50		35	15
14-	50		40	10
15-	60		55	5
16-	60		50	10
17-	60		50	10
18-	50		45	5
19-	50		35	15
20-	50		35	15
21-	30		25	5
22-	30		25	5
23-	30	20	20	-
	1,100	(-80)	850	170

Conclusions on the weight of freight traffic to be catered for at Heathrow in 1970 and beyond

19. On the face of it, this spare capacity would more than suffice for the number of movements of freighter aircraft shown in Table 5, taking the day as a whole. However, freighter movements have to be scheduled to users' demands in much the same way as passenger aircraft movements, and in addition the assumptions made in Table 7 about the number of night movements that will be acceptable may well be over-optimistic. On the figures, therefore, there could be doubt whether Heathrow will be able to handle 500,000 tons of international freight traffic in 1970. On the other hand, over the next eight years there might well be improvements, as yet unforeseen, in air traffic control techniques that will permit Heathrow to handle more aircraft than is shown in Table 7. Moreover, some passenger movements may be transferred from Heathrow, leaving more room for freighter movements. We feel, therefore, that it would be prudent to plan on the basis that Heathrow may be called upon to handle about 500,000 tons of international freight a year by about 1970.

CONVERSION OF TONNAGES TO SPACE REQUIREMENTS

20. A study carried out in 1957 at the request of the Millbourn Committee* showed that freight required approximately one square foot of ground space per ton per year, and this figure was used by the Committee in deciding on the area that would be needed for freight accommodation.

*Report of the London Airport Development Committee - C.A.P. 145.

Peaking of freight storage requirements

21. In practice there are found to be very marked peaks in freight storage requirements at the weekends. Exporters despatch their cargo to the airport before weekend, and it is got away during Saturday and Sunday. Freight arrives steadily by air on Saturday and Sunday, but importers do not in general wish to take delivery of their cargo on Saturday and Sunday. For exports the peak is reached on Friday evenings and for imports on Sunday night and early Monday morning.

Different space requirements of import and export cargo

22. Imports require more room than exports, chiefly because the mean length of stay in the sheds for imports is $2\frac{1}{2}$ to 4 days according to the type of consignment, as against 20 hours for exports. This gap can probably be closed to some degree by the fullest possible use of the Customs concessions outlined in paragraphs 44-46, and by rapid delivery of cleared goods, and every effort should be made to bring this about, but as long as the United Kingdom's complicated protective tariff continues the fact will have to be accepted that imports will take up more warehouse space than exports. It seems unlikely that the entry of this country into the Common Market would markedly reduce space requirements. We were told by the Netherlands Customs authorities that it had not resulted in any saving there, since documentary evidence of origin and consignment had to be produced for Common Market freight and led to a considerable amount of paper work and hence to delay in clearing cargo.

Present day requirements

23. A study was made of British European Airways' freight sheds at peak periods (Friday evening for the export shed, and Sunday evening for the import shed) by the Ministry of Aviation's Operational Research Branch, and the British Overseas Airways Corporation made available to the Working Party the results of similar studies in their sheds. As a result of these studies we recommend the use of the figures in Table 8 for planning the amount of freight accommodation required. The figures include the space needed for Customs examinations but exclude office accommodation.

Table 8

Square feet per ton per year

	Imports	Exports
Short-haul cargo	1.7	0.6
Long-haul cargo	1.25	1.1

24. The lower figure for imports in the case of long haul cargo reflects the fact that such cargo consists in the main of smaller and more easily handled packets. Much of it also is of Commonwealth origin and therefore requires less time for Customs clearance. The higher figure for exports is caused by the lower frequency of flight departures on long-haul routes.

25. These planning figures assume fairly congested conditions at peak periods with 95 per cent "shelf occupancy" for imports and 80 per cent for exports. No allowance has been made for the better utilisation of space which might be achieved by co-operative use of import accommodation - see paragraphs 42 and 43 by better design of racks and shelves, or by improved handling facilities. Nor has any allowance been made for the reduction in the average time that freight spends in the warehouses already brought about by the changes in Customs procedures recently made (see paragraphs 45 and 46).

PROVISION OF SPACE FOR WAREHOUSES

Estimate of the amount of space needed in 1970

26. The airlines and freight agents prefer to handle as much of London's freight as possible at the principal London airport in order to make the best use of inter-lining facilities, staff, premises and equipment. There is also obvious advantage in Heathrow's handling as much freight as can be fitted in without overstraining the airport's capacity. We have therefore tried to find

at Heathrow a site or sites for warehouse space corresponding to the 500,000 tons of international freight expected to be handled there in 1970. Table 9 shows the approximate areas required; it would be prudent at present to allow a substantial margin of error each way.

Table 9

Type of Freight	Short tons	Conversion factor (sq. ft./ton/year)	Space needed (sq. ft.)
Domestic	50,000	0.6	30,000
Short-haul			
Imports (45%)	160,000	1.7	270,000
Exports (55%)	190,000	0.6	114,000
Long-haul			
Imports (45%)	70,000	1.25	88,000
Exports (55%)	80,000	1.1	88,000
Total	550,000		590,000

Impossibility of providing this space in the Central Area

27. The Millbourn Committee assumed that at least 300,000 tons a year would be handled by 1970 and that about 1 square foot of ground space was required for each ton. They also assumed that most of the freight would be carried in passenger aircraft. They therefore recommended that 300,000 square foot of freight accommodation should be built on the north-west of the Central Area and that if more space was ultimately needed it might be necessary to deal with imports outside the Centre. For technical reasons it has proved impossible to site a freight building of the required size parallel to No. 1 Runway, as recommended by the Millbourn Committee. However, a plan was prepared for three blocks in the Central Area with a total area of about 310,000 square feet.

28. A site in the Central Area was chosen by the Millbourn Committee in spite of its acknowledged disadvantages, namely:-

(a) It would take land that could otherwise be used for car parking, aircraft stands, etc.

(b) No aircraft stands could be provided directly linked with the warehouse.

(c) Construction would be delayed by the need to allow existing temporary freight and office buildings to continue functioning until permanent buildings were ready.

(d) There might not be enough room for all freight operations on one site.

(e) Rents would be higher because land in the Central Area is much scarcer and more expensive than elsewhere.

(f) Intensive use of the tunnel and road system by freight vehicles might bring about undue congestion in the Central Area earlier than forecast.

29. The counter-balancing advantages were, however, regarded as conclusive. Since most freight would, it was thought, be carried in passenger aircraft, economic handling required the warehouses to be near the Central Area stands, where the passenger aircraft would be. It was considered more important to have the aircraft adjacent to the passenger buildings than to the freight sheds.

30. Further consideration in this Working Party has led to a radical questioning of the decision to build in the Centre:-

(a) Traffic now looks like growing faster than the Millbourn Committee thought likely. Furthermore, more warehouse space than was thought necessary by the Committee seems to be required for a given weight of traffic, having regard to convenience and speed of handling. It is no longer wise to think in terms of handling the bulk of the traffic on a warehouse floor of 310,000 square feet; a much larger site is required for the main base.

(b) New cargo-handling techniques demand more stands adjacent to the warehouse than can be provided in the Central Area; what was before only desirable is now regarded as virtually essential.

(c) Freighter aircraft will be carrying most of the traffic; they need not use the same aprons as the passenger aircraft.

Possible Split of freight work between two sites at Heathrow

31. Before seeking another site we considered whether it would be practicable to split operations between the Central Area and a site outside it. To handle exports in the Centre and imports outside, the split contemplated by the Millbourn Committee, would bring serious disadvantages. Trans-shipment would be difficult; most export cargo could still not be loaded direct from the warehouses into the aircraft; and all airlines would need more staff and premises. A split putting one group of airlines in the Centre and the rest outside would overcome this last disadvantage but would mean that Customs and agents would have to staff two sets of buildings, and the airlines in the Centre still could not have aircraft stands adjacent to the warehouse. A third possible split, with freight in passenger aircraft handled in the Centre and that in freighter aircraft handled outside, would mean more staff and premises for Customs, agents and most airlines.

32. Any split thus has great disadvantages for some or all of the interests concerned and we considered that it should be entertained only if no other solution proved practicable. We therefore concentrated on finding another site at Heathrow to take the bulk of the freight traffic, leaving the 90,000 square foot building already under construction or in prospect in the Centre to be used as a "topping-up" export shed, for mail, and for other purposes.

The North Terminal Site

33. The first site we considered was the area on the north of the airport between the Bath Road and the taxiway serving No. 1 Runway; the western limit would be the Sipson Road entrance and the eastern limit would, at least in theory, be set by the funnel of No. 2 Runway. This site could be developed more cheaply and quickly than any other, and would have excellent communications with London. It is, however, extremely narrow; room would have to be found for the perimeter road, and in certain areas there would be little opportunity of giving freight vehicles adequate manoeuvring space in front of a warehouse of normal depth. It would be impossible to provide enough aprons and aircraft stands adjacent to the warehouse, and cargo would have to be carried by truck over fairly long distances between sheds and aircraft. Nor could more than about 400,000 square feet of warehouse space be provided, and this area is well below what we think will be necessary by 1970. About 225,000 square feet could be built fairly soon in the areas between Sipson Road Entrance and the Eastern Entrance. Further development could take place later to the east of the Eastern Entrance, giving an additional 150,000-200,000 square feet but this would mean demolishing buildings that still have a substantial life. The double disadvantage of split operations as cargo increases and the lack of an adequate number of stands adjacent to the sheds rules out the development of this site.

Number 3 Maintenance Area

34. The second possible site is one conventionally known as "No. 3 Maintenance Area", south of the western section of No. 5 Runway. Here there is enough land for all the freight buildings, ancillary buildings, aprons and vehicle parks required, as well as for other remunerative developments. The site would also lend itself to the construction of a single import warehouse on the lines discussed in paragraphs 42-43. Agents may require their own warehouse accommodation for the storage of exports before shipment and of imports after Customs' clearance, and the site, unlike the North Terminal Area, would be large enough for this. Aircraft stands could be provided adjacent to the sheds. In spite of its name, the probability that the area will be needed as a maintenance area is regarded as remote. Access by road would be satisfactory. Vehicles could come from the South Wales motorway on the spur road into the airport and thence around the perimeter road, or they could use the Great South West Road. The Ministry of Transport consider that the latter would be capable of taking the traffic expected.

35. The main difficulty is the distance of the site from the Central Area, five miles by the perimeter road. A considerable proportion of freight is carried in passenger aircraft, and a speedy connection with the Central Area is an important factor. An ideal, and, in the airlines' view essential, part of any scheme for using this area would therefore be some form of tunnel connecting it with the Central Area. In addition to providing quicker access to the Central Area the tunnel would reduce the load on the existing tunnel, which might be critical by 1970. Estimates provided for us showed that a three-lane vehicular tunnel would cost about £5 million and that the other costs of developing the area (excluding buildings) would be about £1¾ million. The time taken for full development would be about 5½ years. A two-lane tunnel would cost about £3 million, other costs would remain at about £1¾ million and the time needed for full development would be about 4½ years. A more economical suggestion is for a two-lane conveyor belt tunnel by which freight could be conveyed on pallets or trucks to and from the Central Area. Estimates showed that such a tunnel, of internal diameter 16 feet, would cost about £1 million, the conveyor system about £¾ million, and full development of the area would take 4½ years. Total costs would be about £3½ million. If, in spite of the objections, the perimeter road were used for cargo travelling between aircraft and freight sheds, the cost of development would be about £1¾ million, and the time required about 4 years. There are three grounds for these objections and they are sufficiently substantial to convince us that a tunnel will be necessary:-

(a) the extra cost of providing and maintaining the lorry service;

(b) the much earlier "close-out" time which would have to be accepted for cargo carried by passenger aircraft;

(c) the additional Customs and general supervision which would be needed.

Site outside the airport boundary

36. Because of the capital cost of developing No. 3 Maintenance Area as a freight area and the length of time the development would take, we considered a proposal that about 175 acres of land outside the present airport boundary, on the north of the Bath Road, should be acquired and developed. This site would also be large enough for freight sheds, aprons, ancillary buildings and car parks for the full weight of freight predicted for 1970, without split operations, and there would also be room for expansion if necessary. Like No. 3 Maintenance Area it would lend itself to the construction of a single import warehouse, and development could be gradual, the import and export sheds being extended east and west as required. The area would have to be connected with the airport by a taxiway and road bridge across the Bath Road, which would be sunk to allow for them. These would carry both aircraft and airlines' vehicular traffic. Access to the site would be excellent since there would be a direct road to it from the South Wales motorway. The cost of a similar development to that on No. 3 Maintenance Area, including the cost of the taxiway and road bridge but excluding the cost of the land, is estimated as being of the order of £2¼ million. The time required would be about 4½ years, assuming that there was no unusual delay in acquiring the land and obtaining access to it.

37. The chief disadvantage of this proposal lies in the fact that the area under consideration forms part of an area originally reserved for possible extension of the airport but given up in 1952. Since then it has been kept as an open space and used for agricultural purposes. The local planning authorities have laid great stress on keeping as much green belt in the area as possible, in particular on maintaining the nature of the villages of Harmondsworth and Sipson and preserving the open space between them, and there would very probably be considerable opposition to the scheme on this score. In addition, there would be objections to the prospect of noise inevitable in a development of this kind, particularly the noise of aircraft manoeuvring on the ground.

38. As far as the green belt is concerned, it might be possible to produce a scheme acceptable to the local authorities by trimming the development area so as not to bring the freight buildings and aprons too near the two villages or too close to Harmondsworth Lane, which runs between them. There has already been a considerable amount of piecemeal development on the north side of the Bath Road, and there is a reasonable case for completing it on the lines proposed. The noise nuisance could be mitigated to some extent by a combination

of several measures. The construction of earthbanks to the east and west of the site, with the main freight building and a row of trees on the north, would go some way towards preserving amenities. Earthbanks and other sound barriers are, however, ineffective unless the source of the noise or the hearer is very close to them. The earthbanks would therefore primarily be a psychological help, though they could be used for any aircraft running up after maintenance. In addition, we think that it would be reasonable to require airlines to undertake not to use aircraft engines in the area at night. This, of course, would mean that aircraft would then have to be towed to and from the freight area, thus adding to the airlines' costs and general difficulties. We recognise, also, that the local planning authorities might not agree to the proposals and that in the public enquiry which would follow our arguments might not prevail over the considerations of agriculture, planning and public amenity. A public enquiry, too, would take up a great deal of time during which work could be well advanced on an alternative scheme. Further, with the modifications described above, the area available would be no larger than that in No. 3 Maintenance Area, i.e. 80 acres. Indeed for practical purposes it would be less, since 10 acres would be of limited use for development. Access to the Central Area would not be as good as from No. 3 Maintenance Area with a tunnel, and the load on the present tunnel would be greater.

No. 3 Maintenance Area recommended for development

39. We recommend, therefore, that No. 3 Maintenance Area should be developed on the lines described in paragraphs 34 and 35, as the sole freight area in the airport, except for the "topping-up" facilities for freight mentioned in paragraph 32. It should be connected with the Central Area by a two-lane vehicle tunnel. The airlines and agents feel strongly that the cost of this tunnel, which could also provide an additional means of access to the maintenance areas from the Central Area, should be a charge against general airport revenues.

Split of traffic between Heathrow and other airports

40. During our discussions we also considered the possibility of splitting the freight traffic between Heathrow and other London airports, as well as the possible development of a freighter airport either in the London area or elsewhere. Although these schemes would have the advantage of relieving Heathrow and postponing the date on which its runway air-traffic-control capacity was reached, they would seriously affect interline facilities, since entrepôt traffic would have to be transferred between airports, and airlines and freight agents would be faced with duplicating staff and facilities. For the present, therefore, we consider that the right course is to develop Heathrow's freight capacity to the maximum.

41. We nevertheless recognise that eventually Heathrow's capacity will be reached and that then some traffic will have to be transferred to Gatwick or another airport. By that time the amount of business being done should go some way towards compensating airlines and agents for the extra expense involved.

ECONOMY THROUGH CO-OPERATIVE USE OF IMPORT ACCOMMODATION

42. Co-operative use of import accommodation presents a number of economies, including the following:-

(a) The saving of space and manpower in the provision of common reception and storage areas operated by one authority. Double handling of cargo is avoided and office work reduced.

(b) An undivided storage area makes for more efficient overall use of space; when separate areas are provided for each airline and agent, it frequently happens that one has space to spare when another's space is congested.

(c) The full advantages of mechanisation and improved methods of handling and storing can be gained.

(d) Joint strong rooms, ullage compounds and special areas for perishables also mean a saving in capital expenditure, space and manpower.

43. For these reasons, and also because of the advantages of centralised handling and storage from the point of views of Customs security, we agreed that talks might usefully be held between representatives of the interests concerned, to see whether any practical scheme for co-operative use could be devised. Such a scheme was drawn up in a good deal of detail - see Appendix B to this report - and received the support of the Ministry of Aviation, H.M. Customs, the Corporations and the shipping and forwarding agents. We regard the agreement of the last group to the scheme as of particular significance in view of the increasing proportion of cargo business that is likely to be handled by agents during the period with which we are concerned. The independent airlines are not prepared at present to enter into co-operative arrangements such as are set out in the Appendix, but we hope that the advantages of a comprehensive scheme will in due course commend themselves to them.

CUSTOMS MEASURES

44. The levels of future air traffic estimated in this Report are based on the assumption that the benefits of increasing speed in the air will be fully realised, and we consider that considerable efforts and research will be needed on the part of airlines, agents and H.M. Customs to streamline their procedures in order to accelerate the whole process of handling air cargo at the airports. Any reduction in the length of time that goods have to remain in the airport will also have a material effect on warehouse requirements at Heathrow, where land is scarce.

45. One major problem which presented itself during our consideration of Customs aspects was the clearance of freight outside normal Customs working hours, particularly between 6 p.m. and 10 p.m. and at week-ends. This problem arose to some extent owing to differing interpretations of existing rules, but was resolved in the most practical manner by H.M. Customs' undertaking to clear each day all freight for which documents had been presented to the examining officer on that day. The advantages of this undertaking, both in helping the flow of goods and in saving warehouse space, are obvious and are already being experienced at Heathrow.

46. Customs requirements are necessarily greatest in the case of dutiable imports and are made more exacting because of the very complicated schedule of import duties. H.M. Customs are at present reviewing their requirements generally to see what reductions and simplifications can be made. In addition, they have made a further concession available by extending the time limit for application of the "Triplicate Entry Procedure", which allows goods to be released in advance of complete checking of the Customs entry and, if necessary, in the absence of some of the supporting documents. If full advantage is taken of this it should result in the speedy delivery of a greater proportion of freight and so relieve the pressure on airport shed space.

47. In the ways mentioned above a Customs contribution to the problem of warehouse space at airports can be expected. The effect of this contribution is, however, difficult to assess, and the figures used in paragraphs 22-24 of this Report have therefore not taken it into account.

CONCLUSIONS AND RECOMMENDATIONS

48. We estimate that by 1970 about 500,000 short tons of international freight will be handled at Heathrow, of which about 160,000 tons will be carried on passenger aircraft and about 340,000 tons on freighter aircraft. Imports will represent about 45 per cent of the total. Domestic freight will add another 50,000 short tons.

49. International freighter traffic, together with domestic freighter movements will involve about 30,000 movements of freighter aircraft a year. A study of the passenger aircraft traffic expected in 1970 and the limitations that we have assumed to be imposed on aircraft movements by (a) air traffic control considerations and (b) the need to avoid undue noise at night leads us to conclude that Heathrow will be just able to accept this amount of traffic.

50. We recommend that provision should be made for it to do so. Within the period we are considering, it is premature to plan to divide the freight load

between Heathrow and another airport or airports, whether inside or outside the London area, mainly because of the insufficiency of inter-line facilities elsewhere.

51. We estimate that about 590,000 square feet of warehouse space will be required, nearly double the area which the Millbourn Committee considered would be adequate by this date, when it recommended building 300,000 square feet of freight accommodation in the Central Area. There is room for only 310,000 square feet, at the most, in the Central Area. There are serious drawbacks to every method of sub-dividing the freight work between the Central Area and the Northern Terminal area at Heathrow that we have considered. In our view a solution of the problem which involved such split operations should not be contemplated except as a last resort.

52. After considering possible areas on and off the airport, we recommend that No. 3 Maintenance Area be developed as the single freight area for Heathrow, with adequate import and export sheds to take the load of cargo expected by 1970 and with the necessary ancillary buildings, vehicle parks, aprons and roads. It should be connected with the Central Area by a two-lane vehicular tunnel.

53. Considerable economy in the provision of capital facilities, in space and in manpower, can be achieved by the co-operative sharing of import warehouse accommodation, and we recommend the adoption of the scheme described in paragraphs 42 and 43 and Appendix B, provided that it can be accepted by all airlines concerned.

54. The levels of future freight traffic estimated in our Report are based on the assumption that carriage of cargo by air will retain to the full the advantage of speed, perhaps its main advantage over other methods. There is scope for further speeding up of handling procedures, including Customs' clearance procedures, and we commend the continuing efforts of the airlines, the agents and H.M. Customs to achieve this.

55. Finally, we should like to pay tribute to the work of our secretary, Miss McDowell. She came fresh to civil aviation work but she mastered the considerable detail required very rapidly. She arranged our work most ably and considerably helped in the drafting of our report. We are most grateful to her.

Signed on behalf of the Working Party:-
G. V. HOLE.

August, 1962.

ASSUMPTIONS ON WHICH FORECASTS OF FREIGHT TRAFFIC ARE BASED

1. Europe — The average rate of increase for the next ten years is expected to be about the same as for the period 1955–1960. This takes into account general expectations that reductions in the rate structure in this area will not be sizable but that greater sales efforts will be made to use this extra capacity.

2. North America — The greater rate of increase forecast for 1960–1965 reflects the effect of the rate reductions that have recently taken place on these routes and of the introduction of discounts for quantity. For 1965–1970 the rate of increase settles down to 20 per cent as for European traffic. Average operating costs of freighter aircraft are not likely to fall much below 16d. per load ton-mile, and some current freight rates are already below the level that this figure implies. This will probably be a bar to any increases in traffic greater than those assumed.

3. Other routes — The difficulties in the way of estimating the growth of freight traffic on routes to Africa, Asia and the Far East are even greater than for the preceding area. At present the freight potential exists mainly in the case of traffic from the United Kingdom; there is relatively little traffic to the United Kingdom. This may result in the offering of very low freight rates to encourage traffic to the United Kingdom and thus obtain a more balanced flow, and it is impossible that this could result in spectacular increases in traffic. On the other hand, the difficulty of finding return loads, despite low rates, may still retard the rate of growth. It is felt that on balance the estimates given are the best that can be made at present.

APPENDIX B
(see paragraph 43)

SCHEME FOR CO-OPERATIVE USE OF IMPORT ACCOMMODATION

1. An independent warehousing company should be created by the clearance agencies - both airlines and agents.

2. The premises for import cargo should be provided by the airport authority or by this independent warehousing company or consortium.

3. The warehousing company should act as the single bond holder and rent from the airport authority or owner of the building the rsception and storage areas provided within the import cargo building.

4. The warehousing company should man the common reception area, receiving into this area the cargo carried by all airlines operating into Heathrow. There should be the greatest possible number of doors on the air side of the building, not all of which need be in use at the same time. The dock-shed system of sliding doors should be used. The company should act as the agent of the airlines in discharging their responsibilities under the Warsaw Convention.

5. The warehousing company should transfer trans-shipment cargo directly from the reception area to the export warehouse/warehouses of the on-carrying airlines.

6. The warehousing company should also man the common storage area, to which it should transfer all terminating cargo from the reception area, making the maximum use of mechanised systems for sorting, conveyance and storage.

7. Goods which H.M. Customs wished to examine should be brought by the warehousing company to points in the Customs examination area (stations) specified by the clearance agencies. Goods not wanted for inspection would be moved from the storage area by means of by-passes round the examination stations. These by-passes should be designed so that goods not needed for examination can be conveniently re-united with the rest of the consignment.

8. The Customs examination area should be as open as possible, with benches of a shape to be agreed. It should be divided into fairly large examination stations, which should be flexible both in equipment and in manning.

9. Customs should match the labour provided by the warehousing company.

10. Customs control in the sheds would extend from the entrances on the air side to the points of Customs clearance, or the bypass points.

11. There need be only one physical division in the building (apart from firewalls, if necessary). This would be between the Bonded and Free sections, i.e. between the Customs examination area and the repacking and despatch area.

12. The repacking and despatch area along the landside frontage of the building would not be bonded and would be rented and manned by the clearance agencies (airlines and agents). However, the divisions between them need not be brick walls. To avoid damage and prevent pilferage from open packets, lateral movement (if any) of cargo should take place only in the bonded or storage area. Agencies (airlines and agents) would instruct the warehousing company to bring goods for Customs examination to the Customs station and bypass nearest to their repacking and delivery area.

13. The activities of the warehousing company should be controlled by a board of directors or some other form of management which would be representative of the shareholding agencies. There should also be a consultative body for the benefit of those users of the company's services that were not shareholders.

C.A.P. 192

MINISTRY OF AVIATION

REPORT OF THE AIR FREIGHT WORKING PARTY

LONDON: HER MAJESTY'S STATIONERY OFFICE

1963

Price 2s. 3d. net

FOREWORD BY THE MINISTER OF AVIATION

Air freight is a relatively new but expanding industry with immense potential for the future. British airports must be equipped to handle this traffic and in particular London must be ready to fulfil its role as a major entrepôt and consolidating centre.

The Air Freight Working Party, comprising repressntatives of the Government, the airlines and forwarding agents, was appointed in 1961 to assess the likely growth of traffic during the next ten years and to examine cargo handling facilities and methods in the United Kingdom with particular reference to Heathrow. Its report sstimates that frsight traffic at Heathrow will inorsase from 100,000 short tons in 1960 to about 550,000 in 1970. About 70 per cent of this traffic will by then be carried in all-frsight aircraft.

This volume of freight will require about 600,000 square feet of warehouse space. This is far more than could be provided in ths Central Area, the site proposed by the Millbourn Committee for the main freight terminal. The Working Party has recommended handling all freight traffic (both exports and imports) in ons area and has proposed the establishment of a new freight tsrminal in the south-west corner of the airport, with a connection by vehicle tunnel with the Central Area.

The Working Party's forecasts were based on the 1960 levels of traffic. Traffic in fact grew in 1961 and 1962 at an average of 14 per cent a year compared with the 18 per cent experienced over the previous five years and the 21 per cent assumed by the Working Party for the years 1961-65. Nevertheless, it is likely that freight traffic in future years will approach more nearly the higher rates assumed by the Working Party. Even if the rate of growth were not to increase heycnd the 14 per cent of 1961 and 1962, freight traffic at Hsathrow by 1970 would still need substantially more warehouss space than could be provided in the Central Area.

The Government have accepted the Working Party's recommendations in principle, subject to confirmation that the devslopment of the selected site can be made an economic proposition. As a first step, a firm of enginsering consultants have been appointed to investigate the praoticability of the tunnsl and to prepare a detailed schsme and estimate of the cost. At the same time the airlines are considering schemes for the co-operative use of import accommodation, as recommended by the Working Party.

MINISTRY OF AVIATION

Report of the Air Freight Working Party

CONTENTS

	Paragraph
INTRODUCTION	
Composition of the working party	1
Terms of reference	2
Meetings and visits	3
FUTURE TRAFFIC	
Forecasts by operators and others	4
Effect of consolidation of freight on the volume of traffic	8
Comparison with Netherlands and Swiss forecasts	10
Ratio of exports to imports and the proportion of cargo carried by United Kingdom and foreign airlines	11
Distribution of freight between passenger and freighter aircraft	13
Number of freighter movements at Heathrow in 1970	15
Conclusions on the weight of freight traffic to be catered for at Heathrow in 1970 and beyond	19
CONVERSION OF TONNAGES TO SPACE REQUIREMENTS	
Peaking of freight storage requirements	21
Different space requirements of imports and exports	22
Present-day requirements	23
PROVISION OF SPACE FOR WAREHOUSES	
Estimate of the area needed in 1970	26
Impossibility of providing this space in the Central Area	27
Split of freight work between two sites at Heathrow	31
Consideration of the North Terminal site	33
Consideration of No. 3 Maintenance Area	34
Consideration of a site outside the airport boundary	36
No. 3 Maintenance Area recommended for development	39
Split of traffic between Heathrow and other airports	40
ECONOMY THROUGH CO-OPERATIVE USE OF IMPORT ACCOMMODATION	
Advantages of the scheme outlined in Appendix B	42
CUSTOMS ISSUES	44
CONCLUSIONS AND RECOMMENDATIONS	48
APPENDIX A. Assumptions on which forecasts of freight traffic are based.	
APPENDIX B. Scheme for co-operative use of import accommodation.	